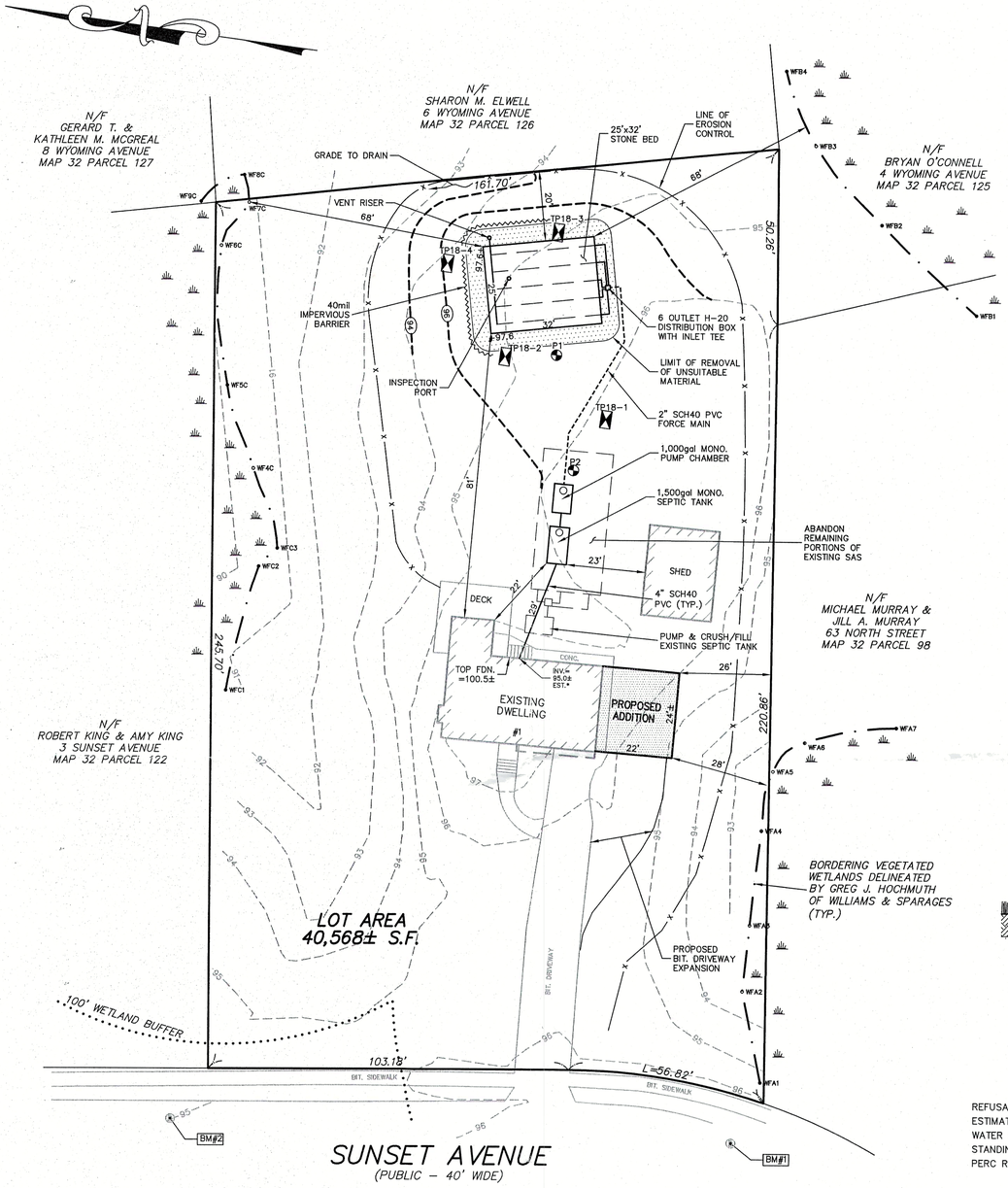


PLAN

GRAPHIC SCALE

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

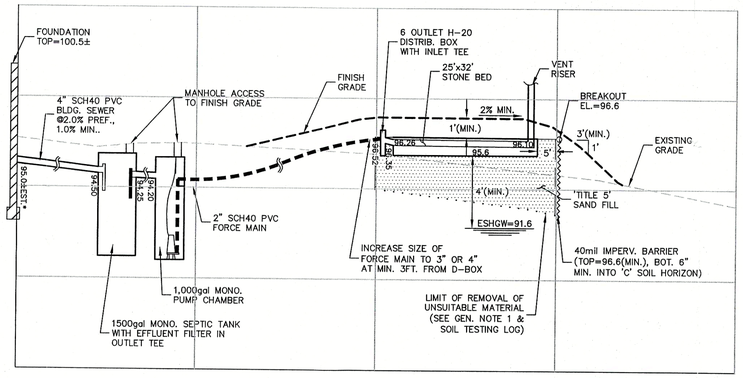
LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- +99.6 PROPOSED FINISH GRADE
- TP18-1 SOIL TESTING LOCATION
- P1 PERC. TEST LOCATION
- BM#1 BENCH MARK (SEE CHART)

BENCHMARKS (NAVD88)		
NO.	DESCRIPTION	ELEVATION
BM#1	DRAIN MANHOLE RIM	96.20
BM#2	DRAIN MANHOLE RIM	94.99

WETLAND RESOURCE AREA TABLE (100 FOOT BUFFER ZONE)		
TOTAL BUFFER AREA	IMPERVIOUS AREA (MAXIMUM = 22%)	
40,243± SF.	3,389 SF. = 8.4%	(EXISTING)
	4,586 SF. = 11.4%	(PROPOSED)

NOTE: ALL PROPOSED WORK IS WITHIN EXISTING ALTERED BUFFER ZONE AREAS. THERE IS NO NEW BUFFER ZONE ALTERATION PROPOSED.



SYSTEM PROFILE

NOT TO SCALE

SOIL TESTING

PERFORMED BY: GREG J. HOCHMUTH, SOIL EVALUATOR – SE 2825
WITNESSED BY: MARTIN FAIR, NORTH READING HEALTH DEPT.
DATE: NOVEMBER 19, 2018

TP-1

EL.=96.2

A	FSL 10YR 3/2	12"
Bw	FSL 7.5YR 4/6	22"
C	LS 2.5Y 5/6	44"(ESHGW EL.=92.5)
	EL.=88.8	89"

REFUSAL	–
ESTIMATED HIGH GROUND WATER	@ 44"(92.5)
WATER SEEPING	@ 62"
STANDING WATER	–
PERC RATE	P-1 @ 40" P<3mpi

TP-2

EL.=95.1

A	FSL 10YR 3/2	12"
Bw	FSL 10YR 5/6	22"
C	LS 2.5Y 5/6	42"(ESHGW EL.=91.6)
	EL.=87.6	90"

REFUSAL	–
ESTIMATED HIGH GROUND WATER	@ 42"(91.6)
WATER SEEPING	@ 44"
STANDING WATER	–
PERC RATE	P-2 @ 34" P<2mpi

TP-3

EL.=94.9

A	FSL 10YR 3/2	12"
Bw	FSL 10YR 5/6	24"
C1	FSL 10YR 5/6	48"(ESHGW EL.=90.9)
C2	LS 2.5Y 5/6	82"
	EL.=88.1	

REFUSAL	–
ESTIMATED HIGH GROUND WATER	@ 48"(90.9)
WATER SEEPING	@ 53"
STANDING WATER	–
PERC RATE	–

TP-4

EL.=94.1

A	FSL 10YR 3/2	12"
Bw	LS 10YR 5/6	20"
C1	MLS 2.5Y 5/6	47"(ESHGW EL.=90.2)
C2	LS 2.5Y 5/4	71"
	EL.=86.6	90"

REFUSAL	–
ESTIMATED HIGH GROUND WATER	@ 47"(90.2)
WATER SEEPING	@ 56"
STANDING WATER	–
PERC RATE	–

VARIANCES: (VIA LOCAL UPGRADE APPROVAL)

1. REQUEST VARIANCE TO REDUCE THE SEPARATION FROM EST. SEASONAL HIGH GROUND WATER TO BOTTOM OF SOIL ABSORPTION SYSTEM FROM 5' TO 4' (SEE PROFILE FOR SEPARATION) 310 CMR 15.405 (1) (h).

SCHEDULE OF INVERTS	PROPOSED
EXISTING INVERT @ FOUNDATION	EL.=95.0±EST.*
SEPTIC TANK INVERT (IN)	EL.=94.50
SEPTIC TANK INVERT (OUT)	EL.=94.25
PUMP CHAMBER INVERT (IN)	EL.=94.20
DISTRIBUTION BOX INVERT (IN)	EL.=96.52
DISTRIBUTION BOX INVERT (OUT)	EL.=96.35
LATERALS INVERT (START)	EL.=96.26
LATERALS INVERT (END)	EL.=96.10
BOTTOM OF STONE	EL.=95.6
BREAKOUT ELEV.	EL.=96.6
ESTIMATED SEASONAL HIGH G.W.	EL.=91.6 (TP18-2)

*CONTRACTOR TO VERIFY PRIOR TO CONSTRUCTION

DESIGN

EXISTING 3 BEDROOM DWELLING

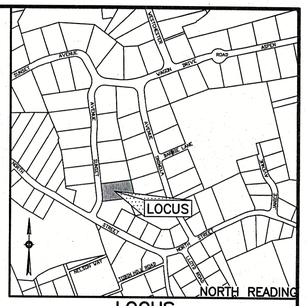
3 BEDROOMS @ 110 gpd PER BEDROOM = 330 gpd
P < 2 MIN. PER. INCH CLASS I SOIL – LTAR=0.74 gpd/sf

REQUIRED AREA: (330 gpd) / (0.74 gpd/sf) = 446 sf

USE 25' x 32' STONE BED (800sf MIN. PER LOCAL REG.)
AREA PROVIDED: 25' x 32' = 800 sf
FLOW PROVIDED: 800 sf x 0.74 gpd/sf = 592 gpd

200% x 330 gpd = 660 gal.
USE (MIN. TITLE V) 1500 gal. SEPTIC TANK

NOTE: SYSTEM HAS NOT BEEN DESIGNED TO ACCOMMODATE GARBAGE DISPOSAL.



LOCUS

NOT TO SCALE

GENERAL NOTES

1. ALL ORGANIC MATERIAL MUST BE REMOVED FROM THE AREA DIRECTLY UNDER AND BEYOND THE PROPOSED SOIL ABSORPTION SYSTEM. THIS AREA MUST BE BACKFILLED TO ELEVATIONS INDICATED ON THESE PLANS WITH SELECT ON-SITE OR IMPORTED SOIL MATERIAL, CONSISTING OF CLEAN GRANULAR SAND OR OTHER GRANULAR MATERIAL, FREE FROM ORGANIC MATTER AND OTHER DELETERIOUS SUBSTANCES. MIXTURES AND LAYERS SHALL NOT BE USED. THE FILL MATERIAL SHALL MEET THE SPECIFICATIONS OF TITLE 5, SECTION 15.255 (3).
2. HEAVY MACHINERY SHALL NOT BE PERMITTED TO PASS OVER THE SOIL ABSORPTION SYSTEM.
3. TIGHT JOINT PIPING IS TO CONSIST OF POLYVINYL CHLORIDE PIPE (P.V.C.) SCHEDULE 40, UNLESS OTHERWISE NOTED.
4. SEPTIC TANK INLET AND OUTLET TEES SHALL BE AS SPECIFIED IN TITLE 5, SECTION 15.227.
5. ALL DISTURBED AREAS ARE TO BE LOAMED, SEEDED AND MAINTAINED TO PREVENT EROSION.
6. THE GENERAL CONTRACTOR IS TO BE RESPONSIBLE FOR ALL HORIZONTAL AND VERTICAL CONTROL OF ALL COMPONENTS.
7. THE DESIGNER HAS NOT BEEN RETAINED BY THE CLIENT TO CONSTRUCT OR SUPERVISE THE CONSTRUCTION OF THE SYSTEM. THE CONTRACTOR IS RESPONSIBLE FOR MAKING ARRANGEMENTS FOR INSPECTION OF INSTALLATION OF THE SYSTEM WITH THE LOCAL BOARD OF HEALTH BEFORE BACKFILLING OVER ANY SYSTEM COMPONENTS.
8. THE DESIGNER MUST INSPECT AND SURVEY THE INSTALLED SYSTEM PRIOR TO THE CONTRACTOR BACKFILLING OVER ANY SYSTEM COMPONENTS. THE AS-BUILT PLAN MUST BE CERTIFIED BY THE DESIGNER WITH A STAMP AND SIGNATURE.
9. PLAN HAS BEEN PREPARED SPECIFICALLY AS A SEPTIC SYSTEM DESIGN PLAN AND IS NOT TO BE USED TO ESTABLISH PROPERTY LINES OR BUILDING SETBACKS. NO REPRESENTATION OR CERTIFICATION AS TO THE ACCURACY OF THOSE SHOWN IS IMPLIED OR INTENDED.
10. SEE BENCHMARK TABLE ON THIS DRAWING FOR ELEVATION DATUM.
11. EXISTING UTILITY LOCATIONS HAVE NOT BEEN VERIFIED. PRIOR TO THE START OF EXCAVATION ACTIVITIES THE CONTRACTOR IS TO CALL DIG-SAFE AT 1-888-344-7233.
12. NO CHANGES ARE TO BE MADE TO THE PLAN DURING CONSTRUCTION UNLESS APPROVED BY THE DESIGN ENGINEER AND BOARD OF HEALTH.
13. THE SYSTEM HAS NOT BEEN DESIGNED TO ACCOMMODATE A GARBAGE DISPOSAL.
14. THERE ARE NO PRIVATE DRINKING WATER WELLS WITHIN 100FT. OF THE PROPOSED SOIL ABSORPTION SYSTEM.
15. THE PROPOSED WORK WILL BE WITHIN THE 100' BUFFER ZONE OF A WETLAND RESOURCE AREA AND WILL REQUIRE A FILING OF A NOTICE OF INTENT WITH THE LOCAL CONSERVATION COMMISSION AND THE MASSACHUSETTS DEPARTMENT OF ENVIRONMENTAL PROTECTION UNDER THE WETLANDS PROTECTION ACT. THE CONTRACTOR SHALL OBTAIN A COPY OF THE ORDER OF CONDITIONS AND FAMILIARIZE HIMSELF WITH ALL REQUIREMENTS CONTAINED THEREIN.
16. ALL SYSTEM COMPONENTS SHALL BE MARKED WITH MAGNETIC TAPE OR A COMPARABLE MEANS IN ORDER TO LOCATE THEM ONCE BURIED, PER TITLE 5, SECTION 15.221(12).
17. EXISTING CONDITIONS INFORMATION – WETLANDS, TOPOGRAPHY, ETC. ARE FROM PLAN TITLED, "REPAIRS OF SUBSURFACE SEWAGE DISPOSAL SYSTEM, 1 SUNSET AVENUE, NORTH READING, MA", PREPARED BY TAJ ENGNEERING, LLC AND DATED MAY 14, 2019, REVISED JANUARY 28, 2021.

LJR ENGINEERING, INC.
Civil Engineers & Land Surveyors
234 Park Street • North Reading, MA 01864 • 978-664-8141

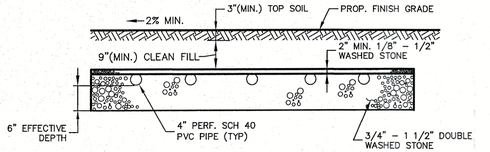
SUBSURFACE SEPTIC DISPOSAL SYSTEM REPLACEMENT

1 SUNSET AVENUE
NORTH READING, MASSACHUSETTS
ASSESSORS MAP 32 PARCEL 123

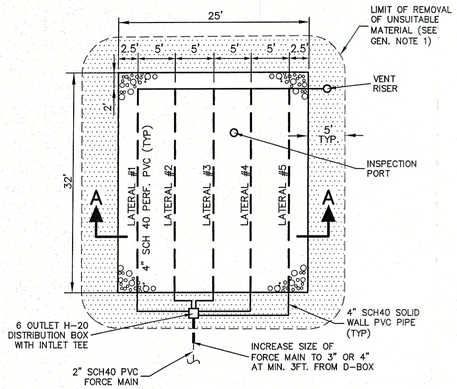
APPLICANT: NICHOLAS ANTONOPOULOS
1 SUNSET AVENUE
NORTH READING, MA 01864

COMMONWEALTH OF MASSACHUSETTS
LUKE J. ROY
CIVIL
No. 47356
REGISTERED PROFESSIONAL ENGINEER
5/28/22

DATE: MAR. 28, 2022	DESIGNED BY: L.J.R.
	DRAWN BY: R.P.O.
SCALE: AS NOTED	CHECKED BY: L.J.R.
	PROJECT No: 22-009
SHEET: 1 OF 2	DRAWING: 22009SEP.DWG



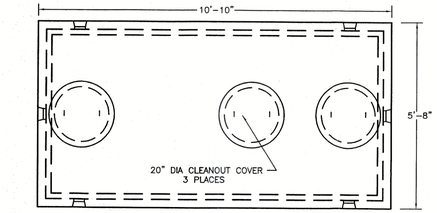
SECTION A-A



PLAN

DETAIL OF SOIL ABSORPTION SYSTEM

NOT TO SCALE



NOTES:
1. SEPTIC TANK SHALL BE 4,000psi MIN. AFTER 28 DAYS.
2. CONSTRUCTION OF SEPTIC TANK SHALL CONFORM WITH DEP TITLE 5, 310 CMR, 15.226 AND SHALL BE WATER-TIGHT.
3. OUTLET TEE SHALL BE EQUIPPED WITH A GAS BAFFLE.
4. PLACE 6" OF STONE UNDER TANK AND DISTRIBUTION BOX.
5. REMOVE TOPSOIL AND SUBSOIL AND REPLACE WITH COMPACTED GRAVEL IN FILL CONDITION.
6. TEES TO BE LOCATED DIRECTLY BELOW CLEANOUT COVERS.
7. SEPTIC TANK SHALL BE MADE WATERTIGHT

1,500 GALLON MONOLITHIC SEPTIC TANK

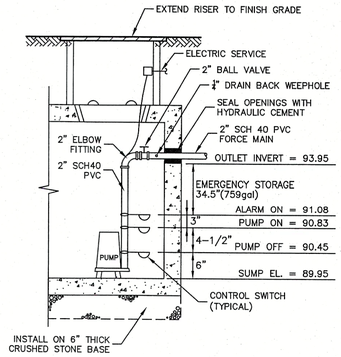
NOT TO SCALE

PUMP CHAMBER NOTES:

1. 4 DOSES/DAY
   DOSE = 330 GDP / 4 = 82.5 gal.
   BACKFLOW = 66 LF.x 0.163 g/lf= 10.8 gal.
   93.3 gal.

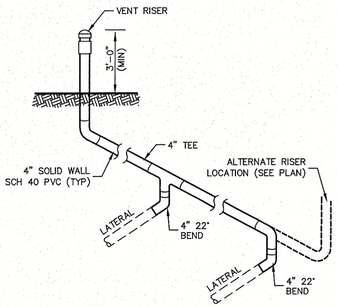
   H = (93.3) / 22 gal. PER INCH = 4.2"

   PUMP ON TO PUMP OFF = 4-1/2 INCHES
2. USE PEABODY BARNES SUBMERSIBLE PUMP MODEL SE 411, 0.4 hp, 115v SINGLE PHASE. (4.12 INCH IMPELLER). INSTALL BALL VALVE TO THROTTLE BACK PUMP TO DELIVER MIN. 25 gpm @ T.D.H. = 9'±
3. INSTALL HIGH WATER FLOAT LEVEL SENSOR IN PUMP CHAMBER WITH VISIBLE FLASHING ALARM TO BE MOUNTED INSIDE DWELLING, ALARM TO BE SEPARATE CIRCUIT TO ONE POWERING PUMP. LOC. TO COORDINATED WITH OWNER.
4. PRECAST CONCRETE PUMP CHAMBER SHALL HAVE A 93.3 GAL. CAPACITY BETWEEN ON AND OFF LEVELS AND A MINIMUM RESERVE CAPACITY OF ONE DAY'S FLOW.



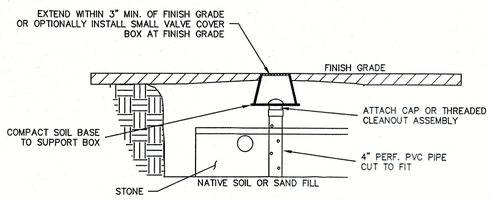
PUMP CHAMBER

NOT TO SCALE



VENT SYSTEM

NOT TO SCALE



INSPECTION PORT

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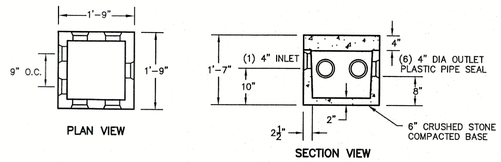

6 OUTLET H-20 DISTRIBUTION BOX

NOT TO SCALE

COMMONWEALTH OF MASSACHUSETTS
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3/28/22

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APPLICANT: NICHOLAS ANTONOPOULOS
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